

GUJARAT TECHNOLOGICAL UNIVERSITY
B.Ph. - SEMESTER-VI • EXAMINATION – WINTER -2022

Subject Code: BP604TT**Date: 10/01/2023****Subject Name: Biopharmaceutics and Pharmacokinetics****Time: 02:30pm to 05:30pm****Total Marks: 80****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

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|-------------|-----|--|-----------|
| Q.1 | (a) | Define following terms: 1) Absorption 2) Total clearance 3) Biopharmaceutics 4) Compartment model 5) Bioequivalence 6) Therapeutic index | 06 |
| | (b) | Enlist different types of Passive transport mechanisms. Write characteristics of passive diffusion. | 05 |
| | (c) | Discuss patient related factors that influence GI absorption of drug. | 05 |
| Q.2 | (a) | How does route of administration and type of dosage form influence rate of drug absorption? | 06 |
| | (b) | Define drug distribution. Write a short note on volume of distribution. | 05 |
| | (c) | Explain effect of Particle size, Polymorphism and lipophilicity of drug on GI absorption. | 05 |
| Q.3 | (a) | Discuss active transport mechanism in drug absorption. | 06 |
| | (b) | Write a note on pH Partition theory with its limitation. | 05 |
| | (c) | Compare protein drug binding and tissue drug binding. | 05 |
| Q.4 | (a) | Write significance of drug dissolution in bioavailability. Write use of different dissolution apparatus with respect to dosage forms. | 06 |
| | (b) | What do you mean by nonlinear pharmacokinetics? Discuss factors causing nonlinearity. | 05 |
| | (c) | Define absolute and relative bioavailability. Discuss methods of measurement of bioavailability. | 05 |
| Q.5 | (a) | What are pharmacokinetic models? What are applications of such models? Discuss any one pharmacokinetic model. | 06 |
| | (b) | Derive equation in determination of absorption rate constant (Ka) using Wegner Nelson Method. | 05 |
| | (c) | What criteria must be considered in calculation of pharmacokinetic parameters from urinary excretion data? | 05 |
| Q. 6 | (a) | Define pharmacokinetics. Draw a well labeled diagram of plasma drug concentration versus time plot and explain pharmacokinetic parameters. | 06 |
| | (b) | Define bioequivalence. Explain Latin crossover design in BE studies. | 05 |
| | (c) | What are loading and maintenance dose? How are they calculated? | 05 |
| Q.7 | (a) | Discuss clinical effect of protein/Tissue drug binding on absorption, distribution and elimination of drug. | 06 |
| | (b) | Write on methods to enhance dissolution rate of poorly soluble drugs. | 05 |
| | (c) | Explain dosage adjustment in patients with hepatic failure. | 05 |
